

# PATENT ABSTRACTS OF JAPAN

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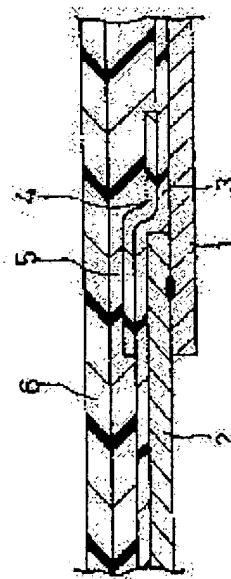
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## (54) RUST PREVENTING STRUCTURE AND METHOD FOR JOINT OF VEHICLE BODY PLATES

(57)Abstract:

**PURPOSE:** To obtain a joint rust preventing structure requiring no after treatment for finishing by providing a tape having a first layer of hot melt film and a second layer of thermosetting viscous resin in a position covering the joint of vehicle body plates, and applying a body coating onto the tape upper surface.

**CONSTITUTION:** In a one in which a steel plate 2 is superposed on a steel plate 1 as a vehicle body plate from above, and the plates are bonded to each other by spot welding, an ED coating film (electrodeposition coating film) 3 is formed on the upper surface of the steel plates 1, 2 as an undercoat film, and on the upper surface thereof, a tape 4 is provided in a position covering the joint of the steel plate 1, 2. The tape 4 is formed of a base material 4a as a first layer and a sticking agent 4b applied to the base material 4a as a second layer, and the base material 4a is a hot melt film made of nylon 12 having satisfactory following property to the unevenness and curved surface of the ED coating film 3 and satisfactory adhesion to coating material. The sticking agent 4b is made of a unhardened epoxy thermosetting viscous resin, and applied to the base material 4a in a thickness of about 30-100 $\mu$ m.



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(54) Name of the Invention : Structure for Rust Proofing of Seam Part of  
Automobile Plate Material and A Method of Its Rust Proofing

(21) Application No : JP. Hei 2 - 74265

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Details

1. Title

Structure for Rust Proofing of Seam Part of Automobile Plate Materials and A Method of Its Rust Proofing

2. Claims

- (1) A structure for rust proofing the seam part of automobile plate materials characterized by comprising a tape which has first layer of hot - melt film or urethane film and second layer of uncured thermosetting resin adhesive is provided at a location which covers the seam part of automobile plate materials provided with undercoating, and film for an automobile body coating is continuously coated on the surface of this tape provided and other parts.
- (2) A method for rust proofing the seam part of automobile plate materials characterized by providing a tape which first layer is hot - melt film or urethane film and second layer is uncured thermosetting resin adhesive at the location covers the seam part of the automobile plate material provided with undercoating, and film is formed by also providing coating on said tape at the time of coating of an automobile body.

### 3. Detailed Explanation of the Invention

#### Technical Field

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The present invention relates to a structure for rust proofing the seam part of automobile plate materials and a method of rust proofing which does not develop rust to the seam part of automobile plate materials.

#### Prior Technology

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There is a case of an automobile plate material which is superposed and sealed to the parts of the automobile body which is visible from the outside because of spot welding.

Such parts like this superposed on automobile plate material, is for preventing rusting of the seam part, for instance, there is a case of coating a thermosetting sealing compound to the seam part of the automobile body, and it is modified by brush, spatula, etc. to maintain an initial exterior view (similar technique of this is described in Patent Kokai No. Sho. 53 - 11575).

Also, there is a case of solder welding of the seam part of an automobile body, and its finishing process is done by abrasion (similar technique of this is described in Patent Kokai No. Sho. 53 - 11575).

### Problems Solved by the Present Invention

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In the tools of rust proofing treatment stated above which is done coating of thermosetting sealing compound to the seam part of automobile plate materials, a finishing process which is done after coating a sealing compound by brush, spatula, etc. needs skilled experience.

That is to say, if sealing compound is removed too much at the time of the modifying process, the edges of the automobile plate material superposed on the automobile body is exposed and sufficient rust proofing cannot be done.

On the other hand, an evenness cannot be maintained if too much sealing compound remains, and its finishing process cannot be easily done homogeneously, and its process needs skillful experience for maintaining evenness.

On the other hand, if the tools of rust proofing treatment which is done finishing process by abrasion after solder welding is done, it does not have problem of quality of exterior view and effectiveness of rust proofing, but it has problem of too many processes and it causes high cost.

Thereupon, this invention offers a structure for rust proofing the seam part of automobile plate material and a method of anti - rusting of the seam part of automobile plate material which is not necessary to do post - finishing and also the quality of external view is excellent, and it has high reliability of rust proofing.

To accomplish the purposes stated above, a structure for rust proofing the seam part of an automobile part material by this invention is provided a tape which first layer is hot - melt film or urethane film and second layer is uncured thermosetting resin adhesive at a location covering the seam part of the automobile plate material, and film for an automobile body coating is continuously coated on the

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surface of this tape provided and the other parts.

Also, to obtain such a structure of rust proofing, a method of anti - rusting by this invention is adhered a tape which first layer is hot - melt film or urethane film and its second layer is uncured thermosetting resin adhesive at the location of the seam part of an automobile plate material provided undercoating, and film is formed by providing coating on the tape stated above at the time of coating of the automobile body.

#### Action

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In this structure for rust proofing the seam part of automobile plate material, the seam part is sealed by providing a tape which first layer is hot - melted film or urethane film and its second layer is uncured thermosetting resin adhesive at the location of the seam part of automobile plate material, and the quality of the exterior view is maintained by forming a film on the whole surface of the automobile body including the film.

On the other hand, in a method for rust proofing the seam part of automobile plate material, follow - up action along the shape of the automobile body and increasing adhesiveness of coating at the time of coating the automobile body and also increased workability can be done by adhering the tape stated above at the location of the seam part stated above.

### Practical Example

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Hereafter a practical example by this invention was explained with figures.

In Figure one, 1 was a steel plate as the automobile plate material, and a steel plate 2 was superposed on this steel plate 1, and these are adhered by spot welding.

ED coating film (electro - deposition coating film) 3 was formed on the surface of these steel plates 1 and 2 as an undercoating film, and a tape 4 was provided on those surfaces of steel plates 1 and 2 formed film at the location of covering a seam of those.

The tape stated above 4 comprising from a base material 4a as the first layer, and an adhesive 4b was coated on base material 4a as the second layer as shown in Figure 3, and it was rolled by interposing a separator 7 before providing.

The base material 4a comprising a hot - melt film made from nylon 12 which thickness was extent of 30 to 150  $\mu$  m, and it has good follow - up properties to the unevenness and the curved surface of ED coating film 3 of the coating surface, and it has good adhesiveness of coating.

The base material of base material 4a may also be an EVA (ethylene vinyl oxide) hot - melt film or urethane film.

Adhesive 4b comprising of an uncured epoxy thermosetting resin adhesive, and it was coated on a base material 4a at extent of thickness of 30 to 100  $\mu$  m.

And adhesive 4b may also be polyester, urethane or acrylic uncured thermosetting resin adhesive, and the adhesives which had good adhesiveness between base material 4a and ED coating film 3 was selected.

And intercoating film 5 as a film was formed on the ED coating film 3 adhered to the tape 4 stated above, furthermore, a overcoating film 6 was formed on the surface of the intercoating film 5.

This structure of anti - rusting stated above, seam part of steel plate 1 and steel plate 2 was definitely sealed, and it makes definite rust proofing of seam, and with that the thickness of tape 4 is extremely thin, and tape 4 has good follow - up action to the surface of the coating, therefore unevenness of the seam part coated overcoating was extremely small, and excellent quality of exterior view can be obtained.

Also, as the structure of superposing the steel plate 1 stated above with steel plate 2, the surfaces of steel plate 1 and steel plate 2 were made to plane level by superposing steel plate 2 to difference in level part 11 formed to steel plate 1 as shown in Figure 2 can also be used other than the structure superposed each end.

In Figure 2, the same number was used to the identical structure parts ... Figure 1, and its explanations were omitted.

Next, according to the method of treatment for rust proofing steel plates 1 and 2 was explained by Figure 4 and Figure 5.

Steel plates 1 and 2 used here were seal outer panels\*\*.

First, the tape 4 was adhered at the location of the seam part of steel plates 1 and 2 which was ED coated as shown in Figure 4.

The reasons for using the tape 4 here, it can obtain desirable thinness to not show the seam, and it is soft, therefore its follow - up properties to steel plates 1 and 2 were excellent, and also an adhesiveness of coating to it is very high.

Next, baking treatment of tape 4 was done (it can be omitted), and its intercoating and overcoating were done as shown in Figure 5, and intercoating film 5 and overcoating film 6 were also formed on the surface of tape 4 as same as the surface of ED coating film 3 of the steel plates 1 and 2.

And then its baking process was done after that, and its rust proofing treatment was completed.

The tape 4 was once softened at the time of the baking process, but it was hardened when it becomes ordinary temperature.

Such a method for rust proofing like this has less process, and also, its process is extremely simple, and not only that, it can maintain high consistency because it is not necessary to do post process for finishing and it does not require expertness for processing.

Especially tape 4 comprising the base material 4a and adhesive 4b in a similar manner as the general adhesive tapes, therefore its handling is easy and it does not require expertness, not only that, adhering process of tape 4 can be done in a perpendicular condition of panel applied with rust proofing treatment, and it has effectiveness of easy processing.

#### Effectiveness

As explained stated above, according to rust proofing of the seam of automobile plate material, it has high effectiveness of rust proofing, because the seam part is sealed by the tape which is adhered to the seam part of the automobile plate material.

Also, it has high effectiveness of high quality of external view, because the film for the automobile film coating is continuously formed on the surface of this film and other parts.

On the other hand, according to the method for rust proofing the seam parts of automobile plate material, because of the usage of tape, there is the effectiveness of increased fittability to the automobile plate material, follow up properties to the shape of the automobile body and adhesiveness of the coating at the time of coating the automobile body.

#### 4. Brief Explanation of the Figures

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Figure 1 is a cross sectional view of the seam part of the plate material to which rust proofing is done.

Figure 2 is a cross sectional view of the other example.

Figure 3 is a diagonal view showing the structure of the tape.

Figure 4 and Figure 5 are the cross sectional views showing the process of the rust proofing treatment.

- 1,2 ----- steel plate (plate material of an automobile)
- 3 ----- ED coating film (undercoating)
- 4 ----- Tape
- 4a ----- Base material (first layer)
- 4b ----- Adhesive (second layer)
- 5 ----- Intercoating film (film coating)

Figure 1

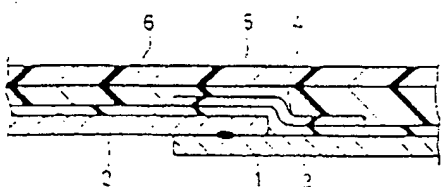


Figure 2

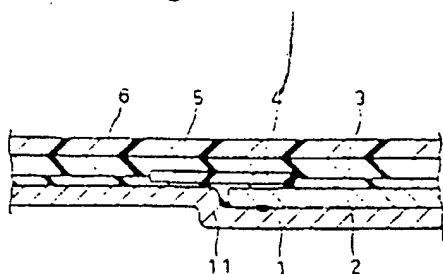
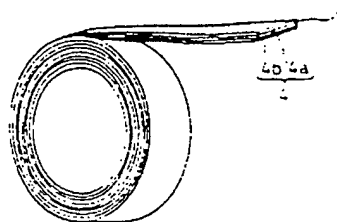


Figure 3



4a --- base material (first layer)  
4b --- adhesive (second layer)

Figure 4

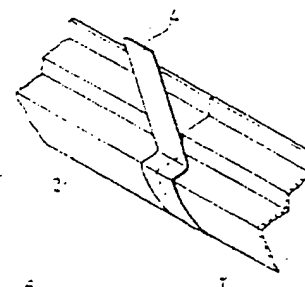
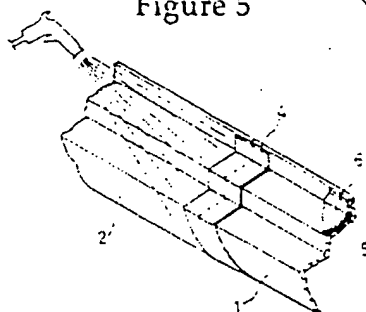


Figure 5



1,2 --- steel plate (plate material of an automobile)

3 ---- ED coating film

4 ----- Tape

4a ---- base material (first layer)

4b --- adhesive (second layer)

5 ---- intercoating film (film coating)

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⑪ 特許出願公開

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審査請求 未請求 請求項の数 2 (全4頁)

⑮ 発明の名称 車体板材の合せ目防錆構造及び防錆方法

⑯ 特 願 平2-74265

⑰ 出 願 平2(1990)3月23日

⑱ 発 明 者 菊 池 正 明 神奈川県厚木市岡田1539-1

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明 細 書

1. 発明の名称

車体板材の合せ目防錆構造及び防錆方法

2. 特許請求の範囲

(1) 下塗り塗装が施された車体板材の合せ目を覆う位置に、第1層をホットメルトフィルムあるいはウレタンフィルムとし第2層を未硬化の熱硬化性粘着樹脂としたテープが被設され、この被設されたテープの上面に車体塗装用の塗膜が他の部分と連続して塗布されて成ることを特徴とする車体板材の合せ目防錆構造。

(2) 下塗り塗装が施された車体板材の合せ目部位に第1層をホットメルトフィルムあるいはウレタンフィルムとし第2層を未硬化の熱硬化性粘着樹脂としたテープを貼付した後、車体塗装時に前記テープ上にも塗装を施し、塗膜を形成することを特徴とする車体板材の合せ目防錆方法。

3. 発明の詳細な説明

産業上の利用分野

この発明は、車体板材の合せ目に錆が発生しない

ようにした車体部材の合せ目防錆構造及び防錆方法に関するものである。

従来の技術

自動車の車体のとりわけ外から見えるような部分に車体板材が重ね合わされてスポット溶接等により接合される場合がある。このように、車体板材が重ね合わされた部分には、合せ目から錆が発生しないように例えば、熱硬化型のシーリング剤を車体板材の合せ目に塗布し、次いで初期外観を確保するためにハケ、ヘラ等により修正作業を行う場合がある(この類似技術は、例えば実開昭52-89460号公報に示されている)。

また、車体板材の合せ目をハンダ溶接した後、研磨によって仕上げ加工を行う場合もある(この類似技術は、特開昭53-11575号公報に示されている)。

発明が解決しようとする課題

熱硬化型のシーリング剤を車体板材の合せ目に塗布する前者の防錆処理手段にあっては、シーリング剤を塗布した後に行うハケ、ヘラ等による仕

上げ作業に熟練が必要となってしまう。

即ち、ハケ、ヘラによる修正作業時にシーリング材を除去し過ぎると上側に重ね合わされた車体板材の端縁が露出してしまい防錆が十分にされなくなり、一方、シーリング剤が残り過ぎると平坦性が損なわれてしまうため、仕上げ作業がバラ付き易く、バラ付きをなくすためには作業者の勘に頼らざるを得ないのである。

一方、ハンダ溶接後に、研磨によって仕上げ加工を行う後者の防錆手段にあっては、外観品質の点でも防錆効果の点でも問題はないが作業工数がかかりコストアップにつながるという問題がある。

そこで、この発明は、仕上げのための後加工が必要なく、かつ、外観品質も良好で、防錆の点でも信頼性が高い車体板材の合せ目防錆構造及び車体板材の合せ目防錆方法を提供するものである。

課題を解決するための手段

上記目的を達成するために、この発明の車体板材の合せ目防錆構造は、車体板材の合せ目を覆う位置に、第1層をホットメルトフィルムあるいは

ウレタンフィルムとし第2層の未硬化の熱硬化性粘着樹脂としたテープが被設され、この被設されたテープの上面に車体塗装用の塗膜が他の部分と連続して塗布されているものである。

また、このような防錆構造を得るために、この発明は、下塗り塗装が施された車体板材の合せ目部位に、第1層をホットメルトフィルムあるいはウレタンフィルムとし第2層を未硬化の熱硬化性粘着樹脂としたテープを貼付した後、車体塗装時に前記テープ上にも塗装を施し、塗膜を形成する防錆方法である。

作用

この車体板材の合せ目防錆構造にあっては、車体板材の合せ目部位に、第1層をホットメルトフィルムあるいはウレタンフィルムとし第2層を未硬化の熱硬化性粘着樹脂としたテープを被設することによって、合せ目部分が密封され、車体塗装用の塗膜がテープも含めて全体に形成されることによって外観品質が確保される。

一方、車体板材の合せ目防錆方法では、前記合

せ目部位に前記テープを貼付することにより、車体形状に沿う追従性および車体塗装時の塗料の密着性の向上、ならびに作業性の向上が図れる。

実施例

以下この発明の実施例を図面と共に説明する。

第1図において、1は車体板材としての鋼板であって、この鋼板1には、鋼板2が上方から重ねられ、スポット溶接により接合されている。

これら鋼板1、2の上面にはED塗装膜(電着塗装塗膜)3が下塗り塗装膜として形成され、その上面には鋼板1、2の合せ目を覆う位置にテープ4が被設されている。

上記テープ4は、第3図に示すように、第1層としての基材4aと、第2層として基材4aに塗布された粘着剤4bとからなり、被設前はセパレータ7をはさんで巻回されているものである。基材4aは塗布面であるED塗装膜3の凹凸及び曲面に対する追従性がよく、また塗料の密着性のよい、30～150 $\mu$ m程度の厚みのナイロン12製ホットメルトフィルムからなる。尚、基材4a

の素材はEVA(エチレンビニルオキシド)系ホットメルトフィルムやウレタン系フィルムでもよい。粘着剤4bは未硬化のエポキシ系熱硬化性粘着樹脂からなり、基材4aに30～100 $\mu$ m程度の厚みで塗布されたものである。尚、粘着剤4bは、ポリエステル系、ウレタン系またはアクリル系の未硬化の熱硬化性粘着樹脂でもよく、基材4aとED塗装膜3との間の密着性を良好にするものが選択されている。

そして、上記テープ4が貼付されたED塗装膜3上には、塗膜としての中塗り塗装膜5が形成され、更に中塗り塗装膜5の上面には上塗り塗装膜6が形成されている。

以上のようにこの防錆構造にあっては、鋼板1、2の合せ目が確実に密封され、防錆が確実なものとなるとともに、テープ4の厚みが非常に薄く塗布面に対してテープ4の追従性がよいので、上塗り塗装後における合せ目に凸凹が少なく、外観品質が非常に良好なものが得られる。

尚、上記鋼板1と鋼板2との重ね合わせ構造と

しては、各端末部を単に重合させる構造以外に第2図に示すように鋼板1に形成された段差部11に鋼板2を重合させて鋼板1、2上面をフラットにしたものも採用できる。第2図において、第1図と同一構成部分には同一符号を付して説明は省略する。

次に、上記鋼板1、2の防錆処理方法について第4図および第5図によって説明する。ここで、鋼板1、2はシルアウトパネルである。

まず、第4図に示すように、ED塗装された鋼板1、2の合せ目部位にテープ4を一般的な粘着テープを扱うように、貼付する。ここで、テープ4を用いるのは、合せ目が目立たないように所望の薄さが得られること及び軟らかく鋼板1、2への追従性が良好で、しかも塗料の密着性が高いためである。

次いで、テープ4の焼付け処理（省略することもできる）を行った後、第5図に示すように中塗り塗装と上塗り塗装を行い、鋼板1、2のED塗装膜3の上面と同様にテープ4の上面にも車体塗

用の塗膜が形成されているため、外観品質が高いものとなるという効果もある。

一方、車体板材の合せ目防錆方法によれば、テープを用いるので、車体板材に対するなじみ性、車体形状に対する追従性、車体塗装時の塗料の密着性が向上し、かつ作業が簡単に行えるという効果がある。

#### 4. 図面の簡単な説明

第1図は防錆処理された板材の合せ目部位の断面図、第2図は他の実施例の断面図、第3図はテープの構成を示す斜視図、第4図および第5図は防錆処理工程を示す斜視図である。

1、2…鋼板（車体板材）、3…ED塗装膜（下塗り塗装）、4…テープ、4a…基材（第1層）、4b…粘着剤（第2層）、5…中塗り塗装膜（塗膜）。

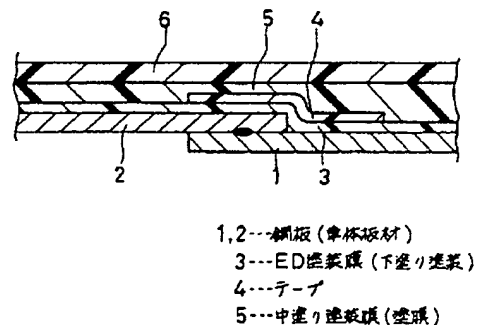
装により中塗り塗装膜5および上塗り塗装膜6を形成する。その後、塗装後の焼付工程が行われ、防錆処理が完了する。焼付工程のとき、テープ4は一旦軟化するが、常温になると硬化する。

このようにこの防錆方法は、工程が少なく、かつ作業が非常に簡単であるばかりでなく、仕上げのための後加工が必要ないため、後加工の精度の良否によるばら付きがなく、作業に熟練度が要求されない。特にテープ4が一般的な粘着テープと同様に基材4aと粘着剤4bとからなるため、扱いが容易で熟練を必要としないばかりでなく、防錆処理対象のパネルを立設した状態でテープ4の貼付作業を行うことができ、作業が楽になる効果もある。

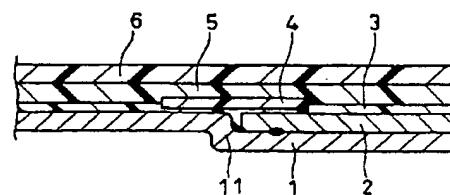
#### 発明の効果

以上説明してきたように、車体板材の合せ目防錆構造によれば、車体板材の合せ目部位に貼付されたテープによって合せ目部位が密封されているため防錆効果が高いという効果がある。また、これらフィルム上面に他の部分と連続して車体塗装

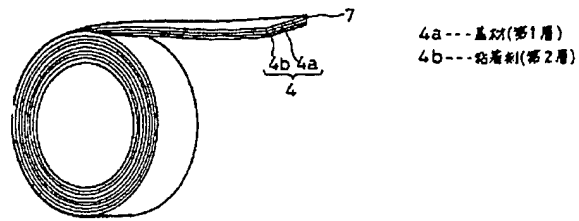
### 第1図



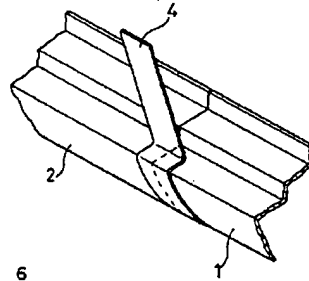
### 第2図



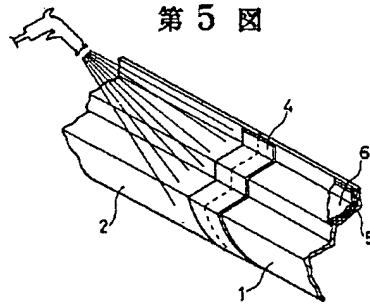
第 3 図



第 4 図



第 5 図



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